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Redesigning and Reframing Educational Scenarios for *Minecraft* within Mother Tongue Education

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Abstract
The aim of this paper is to describe the opportunities and challenges involved in designing educational scenarios for teaching with the computer game *Minecraft* in mother tongue education (MTE). The empirical data presented is based on an on-going research project, funded by the Danish Ministry of Education, which explores the use of a particular game map entitled "The Mysterious Island" in the context of MTE in five primary school classes (age 7-8) located at two different Danish schools. The Mysterious Island scenario is a loosely structured Robinsonade narrative that invites the students to "survive" on a deserted island. The empirical data mainly consist of classroom observations collected and analysed using an ethnographically inspired approach to discourse analysis. The data analysis is based on theoretical perspectives on scenario-based education, which assumes that the educational use of game scenarios can be understood as a dynamic interplay of different domains and knowledge practices. In this way, the educational use of The Mysterious Island is understood as socially negotiated translations between the knowledge practices of the Robinsonade-based game scenario, the knowledge practices of the disciplinary domain of MTE, the knowledge practices of the pedagogical domain of "schooling", and the knowledge practices of the everyday domain, especially in relation to the students' prior *Minecraft* experiences. In summary, the analysis presents preliminary findings on different teachers' educational redesign of The Mysterious Island and the students' reframing of the various domains and narratives involved. We conclude that the meaningful use of *Minecraft* in MTE depends largely on the pedagogical approaches of the teachers to redesigning meaningful game scenarios and opportunities for students to reframe their experiences across the domains and knowledge practices involved.

Keywords: Scenario-based education, Mother tongue education, game-based teaching, framing, *Minecraft*

1. Introduction

The aim of this paper is to describe the opportunities and challenges involved in designing educational scenarios for teaching with the computer game *Minecraft* in mother tongue education (MTE). During the last few years, *Minecraft* has enjoyed considerable worldwide success, which is often ascribed to the openness of the sandbox construction game. Players are essentially free to define their own goals when playing the game, e.g. by killing monsters, building houses and exploring other players' game maps. The open-endedness of the game provides a multitude of options for re-designing the game as a learning resource in formal education, which may explain why the game has also become the focus of attention for a growing number of educators and educational researchers. Working with digital games in an educational context, it is often difficult to manage the complexity of particular game scenarios (Hanghøj, 2013). In response to this challenge, it is possible to use *Minecraft Edu*, which is an educational "plug in" to *Minecraft* that provides teachers with a number of tools for communicating and organising learning activities within particular game maps that can be installed on local school servers. In spite of the growing educational interest and technical possibilities, however, there is a lack of detailed studies on how the game can be used for specific pedagogical approaches, learning activities and curricular aims. As a result, this paper seeks to explore the following research question: How should educational *Minecraft* scenarios be designed and redesigned to provide meaningful frames for teaching and learning in the MTE context?

2. Related work

There exist a relatively small body of research on the educational use of *Minecraft*. Dezuanni, Beavis & O'Mara (in press) describe how students at a girls' school position themselves in relation to each other based on their knowledge of the game, which involve various forms of identity construction and digital participation as curatorship. However, most studies focus more directly on how teachers use *Minecraft* to teach specific subject areas such as geography concepts (List & Bryant, 2014), scientific concepts (Short, 2012), programming through the add on "ComputerCraft" (Trombley & Miller, 2013), or concepts concerning narratives such as plot, point of view, characterization etc. within English/Language Arts (Schifter & Cipollone, 2013; Shah et al., 2014). Apart from the study by Dezuanni et al., these educational studies on *Minecraft* are based on quite limited empirical data. By comparison, there exists comprehensive research on how teachers are or should be able to redesign computer games for educational purposes (cf. Squire, 2004; Van Eck, 2009; Williamson, 2009; Hanghøj, 2013). In summary, these studies point to number of core challenges for game-based teaching. More specifically, teachers need to have sufficiently game literacy in order to understand the dynamics of specific games; they must be able to choose relevant pedagogical approaches, shift between different teacher roles and provide just-in-time lessons to promote students' reflection; and they must have sufficient knowledge of the relevant curricular topics in order to meaningfully redesign selected games for educational purposes.

3. Case

Based on an on-going research project funded by the Danish Ministry of Education (2013-2015), the current study explores how teachers use a particular game map, entitled "The Mysterious Island", which was developed to teach using *Minecraft Edu* in the MTE context in five primary school classes (three 1st grade classes, age 7 and two 2nd grade classes, age 8) located at two different Danish schools, which will be referred to as School 1 and School 2. The Mysterious Island game map is loosely structured around a Robinsonade narrative that invites students to explore and "survive" on a deserted island. Working in small groups, the students are asked to find hidden objects and then discuss, prioritise and build what is most important for their survival. They must also keep a diary of what they experience on the island to be presented at the end of the course. Thus, the curricular aims of the course focus on: 1) learning about the literary genre Robinsonade; 2) learning to collaborate; 3) learning to communicate and argue for particular design choices for surviving on The Mysterious Island; and on 4) learning to write diaries and present their experiences using various multimodal literacies.

4. Theoretical framework

Our theoretical framework is based on the assumption that educational gaming can be understood as a form of scenario-based education (Hanghøj, 2011a, 2013). Inspired by Dewey's theory of inquiry (Dewey, 1916), we conceptualise games as interactive scenarios, which participants can explore by imagining, enacting and reflecting on different choices that involve "various competing possible lines of action" (Dewey, 1922: 132). Moreover, we assume that the process of facilitating and playing game scenarios in educational contexts can be understood as a translation of knowledge practices across four different domains (Hanghøj, 2011a, 2013). The first domain is the domain of *schooling*, which can be defined as institutionalised pedagogical practices recognised as school only, e.g. practices deriving from the special asymmetric relationship between teacher and student. The second domain is the *disciplinary domain*, which in this case refers to the subject-specific discipline of MTE. Third, there is the *scenario-based domain*, which refers to the Robinsonade scenario, which involves the teacher's in-class oral narration of the story of Robinson Crusoe and the open-ended narrative of The Mysterious Island as played in *Minecraft Edu*. Finally, the fourth domain is the *everyday domain*, which refers to non-specialised knowledge practices that mainly exist outside school contexts, such as friendships, family, sports, and the students' everyday knowledge and experience with Robinsonades, as well as with playing *Minecraft*. The dynamic relationship between the four domains is illustrated below (fig. 1) as a series of translations between different knowledge practices.

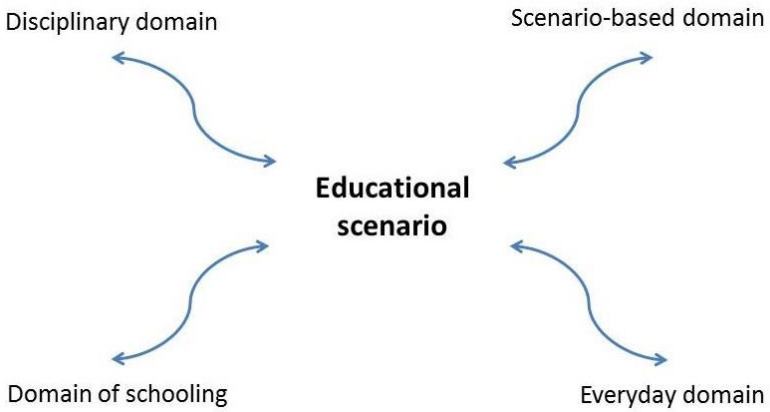

Figure 1. The translation of knowledge practices across domains

In relation to the aim of this paper, we primarily focus on two different types of translations that have emerged in our studies of teacher and student use of the educational *Minecraft* scenario.

The first type of translation concerns the teachers' *redesign* of the available learning resources in the project in relation to the teachers' own interests and educational aims. In order to describe the teachers' redesign, we draw on Schön's conceptualisation of teachers as professional practitioners who must be able to continually design and redesign new lessons, as well as address and improvise responses to emerging issues based on previous experience and their repertoire of relevant teacher practices (Schön, 1983; Wieringa, 2011). As we will try to show in our analysis, the teachers in this project chose quite different pedagogical approaches to redesigning the educational scenario, which arguably may have important consequences for the students' learning experiences.

The second type of translation concerns the different *framings* that are brought into play when facilitating and playing games in educational contexts. According to frame theory, frames can be understood as socio-cognitive principles for organising human experience in particular situations (Goffman, 1974; Fine, 1983; Hanghøj, 2011a). In this way, we assume that the translation of knowledge practices across the four different domains mentioned above can be understood as an interplay of different framings. Thus, the use of *Minecraft* within an educational context may create engaging scenarios that allow students to actively explore and imagine their own lines of narrative inquiry, which may potentially refer to each of the four domains. Educational use of game scenarios, however, may also result in frames clashing (Hanghøj, 2011b), e.g. when students find it difficult to relate their *Minecraft* experience to the Robinsonade storyline. Educational game scenarios often represent a layering of different frames, which may be competing and/or integrated in order to support educational goals. As a result, we will try to show how the students continually tried to *reframe* their experience of The Mysterious Island in relation to the different domains involved.

5. Method and data

The methodological approach of the project is inspired by Design-Based Research (Barab & Squire, 2004), which involves an iterative series of interventions in educational contexts with particular designs for learning in order to generate and refine local theories on a particular phenomenon. Thus, drawing on the overall theory of scenario-based education presented above, we aim to generate local knowledge and educational design principles on how teachers and students enact *Minecraft* in the context of MTE in primary schools.

We collaboratively designed the learning resources for the project and gathered the empirical data in classroom observations at two different schools. There was a three-week observation period of selected lessons in two third grade classes (age 8) at School 1 and two weeks of full-day observations in three second grade classes (age 7) at School 2. In addition to taking field notes, selected episodes were documented using photos, video and sound recordings. Group interviews with each of the two schools' teacher teams were conducted before and after the interventions. An introductory workshop on *Minecraft* and The Mysterious Island was held

for the teachers. Finally, a post-intervention workshop was conducted to allow the teachers to evaluate and compare their experiences of teaching with *Minecraft* in MTE.

The findings presented here describe the first round of interventions, which involved a explorative understanding of the data. Thus, we opted for an ethnographically inspired approach to discourse analysis in order to understand and analyse the relatively comprehensive corpus of data the project generated (Gee & Green, 1998). The goal was to map how significant patterns of communication are related to local practices. After categorising the data in two analytical themes on practices related to either *redesign* or *reframing* of the educational scenario, we selected significant events for further analysis. The study did not focus mainly on individual teachers and students, but rather on the meaning-making *relations* between the participants in the educational scenario. A second round of interventions is planned, which will focus more on developing pedagogical principles for teaching with *Minecraft* within MTE.

6. Analysis

Our analysis focuses on the two analytical themes that emerged through the categorisation of our empirical data. The first theme concerns the teachers' pedagogical approaches to *redesigning* the game-based educational scenario, while the second one centres on the students' *reframing* of their game-based experiences.

6.1. Redesigning the educational game scenario

When interviewing and observing the teachers at School 1 and School 2, it was quite striking that each of the two teaching teams chose significantly different approaches to *redesigning* the initial lesson plan and game scenario. The two teachers at School 1 decided to follow the initial lesson plan and guidelines provided by the project team rigorously. Consequently, they fit the course into their daily schedule and allocated the minimum 18 required lessons in two lesson slots three days a week for three weeks. The teachers both had several years of experience teaching primary school, but only limited knowledge of *Minecraft*, i.e. how to interact with and navigate in the game. This meant that they were quite dependent on their students and other ICT savvy colleagues to show them what was possible in the game and to help solve technical problems. Thus, the School 1 teachers had a limited teaching repertoire for solving unexpected situations, putting them in a position of constantly having to revise their planning and redesign the course on the fly. Moreover, the tight time schedule meant that the students often lacked time to explore the game world during the two lesson slots, where time was also spent on giving instructions and distributing and gathering laptops. Accordingly, their pedagogical approach was based on a minimal redesign of the *Minecraft* course that aligned as closely as possible with their everyday teaching practices due to limited knowledge of the scenario-based game domain.

By contrast, the three teachers at School 2 became quite excited about the idea of working with *Minecraft* and decided "to go all in" on the project. They spent a large amount of time preparing and further developing the course using the storyline method. Together with their colleagues, they created an extensive joint, cross-disciplinary course that allowed the teachers to "add a lot of things" to the original scenario. Over a period of three weeks, the students took part in several activities that related to the Robinsonade storyline. For example, they described the characters in their imaginations and made cardboard *Minecraft* figures and ships that represented how they pictured their ships in the narrative context of the Robinsonade. For the last two weeks of the course, the students worked with Robinsonade activities inside and outside the digital space of The Mysterious Island. Each day followed the same structure and began with a narrative being read aloud for all three classes at the same time that set the theme of the day and connected the students' knowledge of *Minecraft* with the overall Robinsonade theme. Then there was physical exercise and play activities (e.g. songs or mini-games) related to the Robinsonade outside on the playground, followed by teacher instructions in the individual classrooms on specific Mysterious Island activities. Finally, the students discussed what they had experienced and then spent time writing individual diaries about what happened on The Mysterious Island that day. The School 2 teachers had designed a broad range of additional physical and digital storyline activities to maintain the narrative frame of the Robinsonade.

Going back to the domain model presented earlier (fig. 1), the School 1 and School 2 teachers chose quite different pedagogical approaches to *translating* the domains and knowledge practices when redesigning the *Minecraft* course for educational purposes. The School 1 teachers tried to fit the game-based educational scenario into their existing everyday teaching practices with limited attention to the specific knowledge practices

that characterise the specialised game world of *Minecraft* and the students' everyday game experiences. The School 2 teachers, in contrast, spent considerable time not only on familiarising themselves with The Mysterious Island and *Minecraft Edu*, but also on creating a Robinsonade narrative that could integrate the educational game scenario into the MTE curricular aims. The three School 2 teachers each took a slightly different take on how their students should work with the narrative frame of the Robinsonade, thus putting each one of them in the role of designer, allowing them to carefully add and deselect particular elements to meet individual preferences and individual curricular aims. Moreover, the three School 2 teachers had "multiple plan Bs" covering a range of alternative pedagogical activities for problematic situations. For example, some of the students became so exhausted after almost two weeks of intensive collaboration on playing *Minecraft* that they were allowed to go to a quiet room nearby to draw their experiences or build things related to the topic with Lego. In summary, the three School 2 teachers' redesign of *Minecraft* translated knowledge practices across all of the four domains described above in the theoretical framework section.

6.2. Reframing the experience of the educational game scenario

The second analytical theme concerns the students' reframing of the educational game scenario in relation to the knowledge practices of the four different domains. During the courses, the teachers at School 1 and School 2 continually tried to integrate the students' experience of The Mysterious Island with the curricular aim of understanding the specific genre aspects of a Robinsonade. At the same time, both teachers and students often commented on how playing *Minecraft* in a school context was fundamentally different than playing the game at home. Thus, it was often unclear for the teachers and students exactly *how* the educational game practices should be validated, i.e. in relation to the curricular aims, everyday pedagogical practices, and the students' everyday game experiences at home. In this way, the framings related to The Mysterious Island were often mixed and ambiguous. The following analysis focuses on how the students *reframed* their experiences of the educational game scenario in relation to the four domains.

When the two courses began, the students were excited about playing *Minecraft* at school and several students had even had dreams about the game. Thus, expectations were high when the students started exploring The Mysterious Island and engaging in group discussions and knowledge sharing. As a part of their exploration, the students often created *playful reframings* of the game scenario. For instance, one group of students fell into an inescapable lava pit in the beginner part of The Mysterious Island. Inextricably stuck, the students had to respawn to get back into the game. A challenge not to be denied, the lava pit quickly attracted other students, who promptly found themselves sucked into the lava and had to learn to respawn. Some of the students then re-named the lava pool "Hell", even though nothing in the course alluded to this. The lava pool became reframed as a play activity the students spontaneously used to create short, imaginary stories: "Look at me, I'm in Hell now!" There were several other examples of students reframing the meaning of The Mysterious Island into narratives not necessarily linked to any aspect of the overall Robinsonade narrative, but that were more closely linked to the students' everyday experiences with games and narratives.

Moreover, there was also an on-going *pedagogical reframing* of the students' social interaction when exploring The Mysterious Island. For example, the first few hours of game play resulted in similar situations in all of the five classes. A relatively small group of students quickly collected all of the sapphires from the chests in the beginner part of The Mysterious Island. Initially, the teachers had told the students to explore the beginner part without taking any sapphires. Based on their knowledge of *Minecraft*, the students could not refrain from opening the chests without taking any of the sapphires because collecting objects is a common knowledge practice in the game. The students most familiar with the knowledge practices of the game quickly located and collected as many sapphires as possible. This unequal division of resources gave rise to frustration and envy in the students who were not as fast. The teachers at both schools found this issue to be a real dilemma. On the one hand, the teachers felt the students should be allowed to play the game like they did at home, but, on the other, they also believed learning about collaboration, a curricular aim of the project, was important. Some of the teachers tried to address the issue in a class discussion. The solution was to redistribute the sapphires in way that made sense to both the expert and novice gamers. Consequently, the teachers and students had to reframe the game based on a compromise that lived up to the students' everyday game experiences and the pedagogical knowledge practices at school.

The students' experience of the ambiguous framings also emerged in their *curricular reframing* of the course that referred to the disciplinary domain of MTE. Given their lack of experience with *Minecraft*, the two School 1 teachers often found themselves at a loss when trying to answer student questions about the game and the course. One of the students asked: "Why are we actually working with *Minecraft*?", and the teacher replied: "Because we're working with Robinsonades in Danish class". This somewhat closed response narrows the aims of the course to understanding the Robinsonade, which is a well-established MTE genre. Thus, the teacher does not mention the other important verbs and activities (e.g. exploring, discussing, planning, building, and reflecting), which are key aims of working with *Minecraft.* The two School 1 teachers also did a discussion on what the students liked and disliked about *Minecraft* that resulted in a heated conversation about the premises for survival on The Mysterious Island:

Teacher 1:	Is there anything that isn't nice or that you don't like…?
Girl:	Getting hit by others in *Minecraft*
Teacher 2:	That's the thing… if that was possible.
Boy:	Yes, getting whacked!
Boy:	Can we whack each other?
*NOISE****|	
(…)	
Teacher 1:	But that's actually *what's good about* being in this world… that you *can't* actually, you *can't* die.
Boy:	*Aw!*
Boy:	*Ugh!*
Boy:	Aw, that's a downer!
*NOISE****|	
Teacher 1:	So… What else could it be that you don't like?
Teacher 2:	Alma is actually saying something. It's a *survival island* we're on… so we have to *survive.*
Anders:	*But, but… you can't survive when you can't die!* You can't!
Boy:	Then it's easy to survive!
Girl:	*Well, that's not the purpose, is it Anders?!*

As experienced *Minecraft* players, the students know the game can be played in Survival mode, where players can kill and be killed by monsters. For educational and ethical reasons, The Mysterious Island game scenario was designed to be played in the Creative mode, where students could explore and build without being killed or being allowed to kill anyone. Thus, the educational game scenario comprised no imminent danger or conflict, allowing the Robinsonade narrative dynamic to be freely interpreted when enacted by the teachers and students. The above dialogue shows that surviving involved potential "frame clashes" between the experience of surviving in the open-ended game world of *Minecraft*, the loosely structured narrative of The Mysterious Island, and, finally, the linear narrative of the Robinsonade, where the story has to follow a specific structure. During the two courses, several episodes demonstrate how the students reframed their experience of the educational game scenario in relation to three different domains: 1) the everyday domain of playing *Minecraft* in the Survival mode; 2) the disciplinary domain of understanding the characteristics of a Robinsonade; and 3) the scenario-based domain of The Mysterious Island, which implies a rather open-ended definition of survival.

The example above indicates that the *Minecraft* course sometimes involved confusion and frame clashes in relation to the various possible meanings of survival. The ambiguous framings and different interpretive definitions of survival, however, also offered *learning opportunities through the reframing of the students' game experiences*. This became particularly clear when the students had to collaborate, discuss and plan their survival on The Mysterious Island. In a School 2 class, several of the groups came to the conclusion that setting up police stations should have the highest priority when planning their survival in order to create a sense of security because the police would be able to overcome dangers and threats. In this way, the students tried to make meaningful translations between surviving on The Mysterious Island and their everyday understanding of what it meant to survive. At the prospect of creating a new society on The Mysterious Island based mostly on police stations, the teacher decided to challenge her students' decision:

Teacher:	Why do you think it's so important to have a police station?
Frederik:	If there's a lot of people making trouble.
Teacher:	Well, *you're* the ones who are making the trouble because you're the only ones living there… What could you be up to?
Frederik:	We might end up hitting someone because we had too much alcohol or whatever.
Teacher:	Yes, and where would you get that alcohol from, Frederik?
Frederik:	From a store or whatever.
Teacher:	Where would you get the store from, Frederik?
Frederik:	I would get it from a company.
Teacher:	Where would you get the company from, Frederik?
Frederik:	Er... I would build it (*laughs*).
Teacher:	Okay, what are you going to build it with, Frederik?
Frederik:	Wood.
Teacher:	Well, what's in the company and where would you get it from, Frederik?
Frederik:	Er… electricity?
Teacher:	Where will you get electricity from, Frederik?
Class:	*Laughs.*
Teacher:	Sometimes you all tend to forget what this is and I can understand why. But you have to remember that you're sitting on a deserted island *with nothing on it*. Can you remember that we talked about what you were going to build? And you said, *"You know, we need a fire station, and if something happens, we just call 911"*. But what are you going to call with? "Well, the phone". And I said, where will the phone come from? "We're just going to build that". With what? "Er… with iron". And I said: But are phones only made of iron? "No, we also need some electricity in it." But where do you get the electricity from?!
Class:	*Laughs.*
Teacher:	So, you see, it's not that simple… that you just grab your iPad or phone and then you say: "Hello hello, can you come over, because there's a fire here!"
Eva:	Well, it'is enough with just one police station for the whole island. There also only needs to be one hospital.

By questioning Frederik's design choice and his underlying reasons, the teacher tries to make him reflect on the complex relations between needs, causes and effects in a modern society and how they relate to prioritising when surviving on a deserted island. The teacher's tough interrogation has a humorous aspect as she is deliberately asking an almost endless series of questions that verge on the absurd. In this way, the teacher is not so much seeking for a pre-determined answer as she is trying to promote reflective thinking while playing along in the co-construction of possible solutions to the imaginary problem of survival on The Mysterious Island. After the teacher wrapped up the discussion, Eva's final comment indicates that the students realise they need to reconsider their priorities. In this way, the example shows how the narrative meaning of surviving on The Mysterious Island is reframed to fit with the imaginary scenario of surviving on a deserted island in the real world, which refers to the students' understanding of the everyday domain, e.g. the need to feel safe from troublemakers by being able to catch them and the need for electricity.

7. Discussion

The findings that relate to the first analytical theme indicate significant variation in the teachers' pedagogical approaches at School 1 and 2 to redesigning the course. At School 1, the teachers' minimal pedagogical approach proved problematic as the teachers rarely had an overview of the students' game activities and had few emergency plans prepared if new, unexpected situations emerged. The teachers at School 2, in contrast, used a comprehensive storyline approach to redesign the whole course with emphasis on a coherent Robinsonade narrative, which required far more work but also provided the teachers with an overview and "lots of plan B's" to choose from when dealing with new situations. The difference between these two pedagogical approaches points to a dilemma when trying to innovate educational practice. On the one hand, the introduction of unknown technologies and the development of new teacher practices may be notoriously demanding (Squire et al., 2003; Hanghøj, 2013). On the other hand, teachers who spend time preparing new technologies and new

forms of teaching may experience less stress and be more able to improvise qualified responses to new problems (Schön, 1983). Thus, the School 1 teachers may have benefitted from a less rigid schedule and more familiarity with the technical aspects and game dynamics of *Minecraft* as a specific domain with particular knowledge practices. At the same time, it can also be argued that even though the School 2 teachers came up with several creative additions to the educational scenario (e.g. redecorating their surroundings, sending a message in a bottle, orchestrating a crisis in *Minecraft* based on an attack by older students pretending to be cannibals, and arranging for the children to be saved in the end by the local mayor), that created a more coherent Robinsonade narrative, some of these additions might have been replaced by less complex choices to meet the overall curricular aims.

In relation to the second analytical theme, the findings indicate that continual "translation work" is required by teachers and students in order to reframe the loosely structured game world of The Mysterious Island into a meaningful narrative frame within the MTE context. Thus, the idea of mixing the open-ended game scenario of *Minecraft* with the Robinsonade narrative frame does not automatically make sense. Teachers and students need a sufficient understanding of the different frames involved as well as clear aims (e.g. what does it mean to survive?) and relevant activities (e.g. collaborating, planning and building houses) in order to accept and meaningfully reframe their experiences across the involved domains. Moreover, the findings also indicate that the mixing or "blurriness" of the different frames and domains should not necessarily be seen as a problem as this ambiguity may offer valuable opportunities for learning, e.g. when students are challenged to reflect upon and argue in favour of their ambiguous design choices. In this way, the findings indicate the importance of creating and integrating different framings, but also the importance of challenging and questioning students' decisions and showing how they involve dynamic knowledge translations across different domains.

As mentioned, the preliminary findings presented here are only based on our first round of interventions, which were quite explorative. Following the iterative approach of design-based research, we plan a second round of studies on how *Minecraft* can be redesigned and reframed within MTE. More specifically, we aim to provide teachers with more knowledge on key curricular aims and key game dynamics when teaching with *Minecraft*. Moreover, we plan to design student assignments that more directly frame and address students' specific game experiences in order to scaffold and develop their game-related literacy practices (Apperley & Beavis, 2011) – e.g. by creating their own endings to the Robinsonade narrative.

8. Conclusion

The main contribution of this paper is to show how the educational use of *Minecraft* in MTE needs to carefully consider teachers' pedagogical approaches to redesigning particular game scenarios and students' possibilities for reframing the involved domains and their specific knowledge practices. Thus, teachers should be able to (re-)design educational scenarios that facilitate coherent and meaningful translations across different types of narrative frames (e.g. the open-ended world of *Minecraft,* the Robinsonade's linear narrative and the loosely structured narrative of The Mysterious Island), which implies different genre expectations as well as different ways of integrating physical and digital learning environments. Similarly, students should be allowed to explore, experiment and argue in favour of the meaning of their design choices and how they relate to the different framings available. Finally, this paper points to the need for further studies on how students' reframings can be related to specific literacy practices and curricular aims when redesigning *Minecraft* for MTE.

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